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NEW GAUGE-CHANGING MECHANISM
FOR GERMAN AND SOVIET RAILROAD CARS

[Figures are appended.]

The new two-axle boxcars, refrigerator cars, tank cars, and flatcars which the Directorate General of the Reichsbahn has ordered from the railroad-car-building plants in the German Democratic Republic are now being built convertible, for automatic transition from western standard-gauge track (1,435 millimeters) to Soviet broad-gauge track (1,524 millimeters).

Conversion of three- and four-axle freight and passenger cars causes technical difficulties because of the greater differences between West European and Soviet car types.

Both German and Soviet convertible freight cars receive the additional type designation "r" (four Russland or Russkiy). Thus, the convertible German freight cars bear the designations Gr, Glr, Vr, and Rr.

Introduction of the new gauge-conversion process using double-gauge conversion wheel sets was delayed because of the high capital investment needed.

The expensive double-gauge conversion wheel set (Figures 1 and 2) is a so-called movable-wheel set. The wheels (a) are tilted toward each other and revolve around the journals (b) of the immovable car axle (c), unlike the changeable-wheel sets, which have a rotating axle with the wheels pressed solidly upon it. The axle is secured against turning by a clutch (d) (Figures 3a and 3b). By uncoupling this clutch and turning the axle by 180 degrees, the movable wheels can be set at the standard gauge of 1,435 millimeters (Figure 1); and by turning the axle another 180 degrees they can be set at broad gauge of 1,524 millimeters again (Figure 2). The wheels are set to the gauge desired completely automatically by a converting installation built next to the track at the gauge-change point. (Figures 3a and 3b). The shaft (e) glides along a guide rail (f) and is moved in toward the axle. It thus releases the clutch (d) which secures the axle (c) against turning. A cog-wheel (g) which is coupled to the axle then runs over a cogwheel in the stationary converting installation and turns itself and thus the axle by 180 degrees. This

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causes the wheel to change from the position shown in Figure 1 to the position shown in Figure 2, or vice versa. After the axle is turned, the shaft (e) slides off the guide rail (f) and is pushed outward by the pressure of the spring (h). Simultaneously, the clutch engages the axle again and prevents its further turning.

By way of comparison, in one of the methods now in use for changing gauge by changing the axles, an 18-man crew is used to handle three cars in each direction per hour.

It is also possible for Soviet broad-gauge, two-axle freight cars to convert from broad- to standard-gauge track by changing wheel sets, because with few exceptions the contour lines of the Soviet cars corresponds to that of the German cars. To avoid collisions of cars with buildings or with cars on the next track, the maximum vertical and horizontal measurements may not exceed the two contour lines. These contour lines thus determine the maximal car width and height measurements. Since both contour lines coincide in the principal width and height measurements, transit traffic from standard to broad gauge and vice versa is possible.

In view of the clearance diagram for structures on German and other Central European railroads, most Soviet broad-gauge, two-axle freight cars can be used on the railroads of the members of the former Union of Central European Railroad Administrations (railroad nets of Austria, Hungary, Netherlands, Denmark; main lines of Luxembourg, Alsace-Lorraine, Czechoslovakia, Yugoslavia, and Greece). However, clearances on Belgian, French, Italian, and Swiss railroads preclude the use of these Soviet cars.

[Appended figures follow.]

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Figure 1

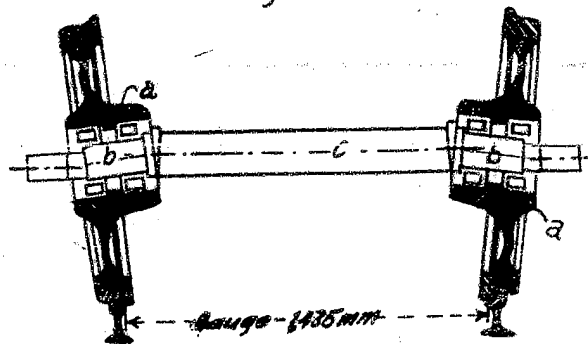


Figure 2

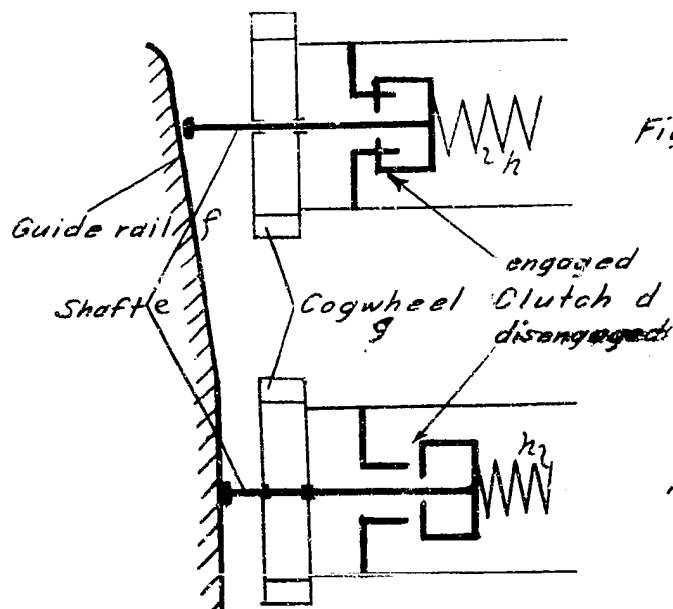
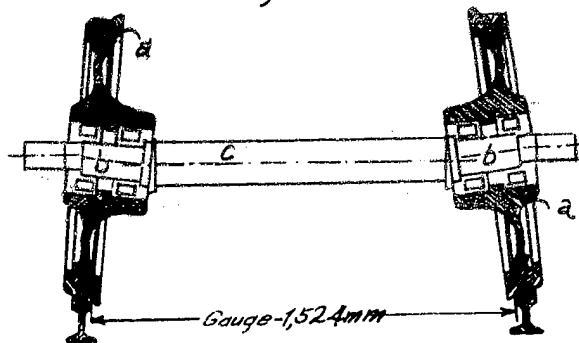


Figure 3a

Figure 3b

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